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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,877	03/04/2002	Junichi Shiomi	50063-064	1977

7590

07/26/2005

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EXAMINER

KIM, CHONG R

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,877

Applicant(s)

SHIOMI ET AL.

Examiner

Charles Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,5,7,10,12 and 15 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,8,9,11,13 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment and Arguments

1. Applicant's amendment filed on February 9, 2005 has been entered and made of record.
2. Applicant's arguments, see pages 9-11, filed February 9, 2005, with respect to the rejection(s) of claim(s) 1, 3-4, 6, 8-9, 11, 13-14 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the combination of Ushio et al., U.S. Patent No. 6,271,047 ("Ushio") and Hirose et al., U.S. Patent No. 6,753,972 ("Hirose"), the details of which are provided below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 6, 8, 9, 11, 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ushio et al., U.S. Patent No. 6,271,047 ("Ushio") and Hirose et al., U.S. Patent No. 6,753,972 ("Hirose").

Referring to claim 1, Ushio discloses a device for detecting an end point of polishing of a substrate, comprising:

- a. a camera configured to obtain a two-dimensional image of a substrate surface targeted for polishing (col. 7, lines 20-25);
- b. an image characteristic value calculator configured to calculate a characteristic value for the two-dimensional image by analyzing the two-dimensional image (col. 3, line 65- col. 4, line 44); and
- c. a polishing end point determinator configured to determine an end point of polishing of the substrate according to the image characteristic value (col. 4, lines 2-17).

Ushio does not explicitly disclose that the image is a monochromatic image. However, this feature was exceedingly well known in the art. For example, Hirose discloses that a white light source can be replaced with a monochromatic light source in order to obtain a monochromatic two-dimensional image of a substrate surface targeted for polishing (col. 6, lines 1-14).

Ushio and Hirose are combinable because they are both concerned with imaging systems for detecting an end point of polishing of a substrate. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the white light source of Ushio so that it comprises a monochromatic light source for generating a monochromatic image, as taught by Hirose. The suggestion/motivation for doing so would have been enhance the accuracy of the imaging system (Hirose, col. 6, lines 8-9). Therefore, it would have been obvious to combine Ushio with Hirose to obtain the invention as specified in claim 1.

Referring to claim 3, Ushio further discloses that the image characteristic value is a difference statistic index that substantially represents a statistical value regarding pixel value differences in the two-dimensional image (col. 4, lines 24-43. Note that the “difference from a

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selected local minimum from a selected local maximum” in lines 32-33 is interpreted as a difference statistic index).

Referring to claim 4, Ushio further discloses that the polishing end point determinator determines a time of the end point when the image characteristic value has reached a predetermined threshold value (col. 4, lines 2-17 and col. 6, lines 64-67).

Referring to claims 6 and 11, see the rejection of at least claim 1 above.

Referring to claims 8 and 13, see the rejection of at least claim 3 above.

Referring to claims 9 and 14, see the rejection of at least claim 4 above.

Allowable Subject Matter

4. Claims 2, 5, 7, 10, 12, 15 are allowed.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 571-272-7421. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 571-272-7414. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ck
July 13, 2005



SAMIR AHMED
PRIMARY EXAMINER